

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of claims in the application.

1-5. (Cancelled)

6. (Currently Amended) An ignition timing controller, comprising:

 a crank angle detecting means for generating a crank angle pulse signal for each rotation of a predetermined angle, and for generating the pulse signal immediately before the crank angle corresponding to the top dead center of a piston of said internal combustion engine as a reference pulse signal having an aspect different than an aspect of non-reference crank angle pulse signals; said crank angle detecting means being rotated in association with a crank shaft of an internal combustion engine; and

 an ignition control means for controlling ignition timing of said internal combustion engine in accordance with said crank angle pulse signal;

 wherein in a period from when cranking of said internal combustion engine is started to when said crank shaft has completed one rotation, said ignition control means instructs spark discharge of an ignition plug of said internal combustion engine for the ignition timing in accordance with a reference crank angle pulse signal generated immediately after said reference pulse signal, and

 wherein said ignition control means instructs electric supply to an ignition coil in accordance with said reference pulse signal before the instruction of the spark discharge of said

ignition plug in the period until said crank shaft is rotated once after the cranking of said internal combustion engine is started.

7. (Cancelled)

8. (Currently Amended) ~~The crank angle detector~~ The ignition timing controller according to claim 6, wherein said crank angle detecting means comprises:

a rotor rotated in association with said crank shaft of said internal combustion engine and including projections, every projection on said rotor being one of a plurality of detection portions to be detected at equivalent angle intervals on an outer circumference of said rotor; and

a pickup arranged at the vicinity of the outer circumference of said rotor, said pickup generating said crank angle pulse signals when each of said plurality of detection portions pass therethrough;

wherein a selected detection portion among said plurality of detection portions is located immediately before the crank angle corresponding to the top dead center of the piston of said internal combustion engine and is set to generate said reference pulse signal, and

wherein the respective rear end positions of the plurality of detection portions are located at equivalent angle intervals in the rotating direction of said rotor, and a length from a rear end position to a front end position of said selected detection portion is different than lengths from rear end positions to front end positions of non-selected detection portions among said plurality of detection portions.

9. (Previously Presented) The ignition timing controller according to claim 6 or 8,
wherein said crank angle pulse signal including said reference pulse signal is constructed
by a negative pulse and a positive pulse constituting a pair, and
wherein said negative pulse is generated correspondingly to the front end of each of said
plurality of detection portions, and said positive pulse is generated correspondingly to the rear
end of each of said plurality of detection portions.

10. (Previously Presented) The ignition timing controller according to claim 9, wherein said
ignition control means discriminates said reference pulse signal in accordance with the
magnitude of a ratio of a generated interval between two of said negative pulses and a generated
interval between two of said positive pulses.

11. (Previously Presented) The ignition timing controller according to claim 9, wherein in the
period from when cranking of said internal combustion engine is started to when said crankshaft
has completed one rotation, said ignition control means instructs an electric supply to said
ignition coil when a value obtained by dividing the generated interval between said negative
pulses by the generated interval between said positive pulses is smaller than one, and
wherein said ignition control means also instructs the spark discharge of said ignition
plug when the value obtained by dividing the generated interval between said negative pulses by
the generated interval between said positive pulses is greater than one.